

CARE PLANNING

Pneumonia

Setting: **Inpatient** Population: **Pediatric** Keywords: **pulmonary, viral, infection, bacterial**

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Clinical Description

Care of the hospitalized child experiencing an infection of the pulmonary parenchyma that occurs as either a primary disease or as a complication of another condition.

Key Information

- Knowledge of previous antimicrobial therapy exposure and drug resistance patterns in the patient's local area may influence choice of empiric antimicrobial therapy (e.g., methicillin, beta-lactam, macrolide).
- De-escalated (narrowing antibiotic therapy or changing from combination to monotherapy) rather than fixed antibiotic regimens are suggested for patients with hospital-acquired pneumonia and ventilator-associated pneumonia.

Clinical Goals

By transition of care

A. The patient will demonstrate achievement of the following goals:

- Fluid Balance
- Resolution of Infection Signs and Symptoms
- Effective Oxygenation and Ventilation

B. Patient, family or significant other will teach back or demonstrate education topics and points:

- Education: Overview
- Education: Self Management
- Education: When to Seek Medical Attention

Correlate Health Status

Correlate health status to:

- history, comorbidity, congenital anomaly
 - age, developmental level
 - sex, gender identity
 - baseline assessment data
 - physiologic status
 - response to medication and interventions
 - psychosocial status, social determinants of health
 - barriers to accessing care and services
 - child and family/caregiver:
 - health literacy
 - cultural and spiritual preferences
 - safety risks
 - family interaction
 - plan for transition of care
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Fluid Imbalance (Pneumonia)

Signs/Symptoms/Presentation: Fluid Deficit

- capillary refill delayed
- eyes sunken
- fatigue
- fontanel sunken (infant)
- irritability
- listless
- mucous membranes dry
- peripheral pulse strength decreased
- skin turgor decreased
- tearing decreased or absent
- thirst
- urinary output decreased
- urine concentration increased

Signs/Symptoms/Presentation: Fluid Excess

- acute weight gain
- bounding pulses
- breath sounds change
- crackles in lungs
- edema
- neck and hand veins distended
- positive fluid balance
- restlessness
- shortness of breath
- wheezing

Vital Signs

- heart rate increased or decreased
- blood pressure increased or decreased

Laboratory Values

- BUN (blood urea nitrogen) abnormal
- Hct (hematocrit) abnormal
- serum sodium abnormal
- urine specific gravity abnormal

Problem Intervention(s)

Monitor and Manage Fluid Balance

- Assess fluid requirements and deficit to determine fluid therapy goal.
- Keep accurate intake, output and daily weight; monitor trends.
- Monitor laboratory value trends and need for treatment adjustment.
- Encourage oral intake, when able. If not able to meet requirements, determine need for intravenous fluid therapy to achieve fluid balance.
- Evaluate potential sources that may lead to fluid overload (e.g., oral, enteral, intravenous fluid, medication).
- Assess neurologic status frequently due to risk of hyponatremia.

Associated Documentation

- Fluid/Electrolyte Management
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Infection (Pneumonia)

Signs/Symptoms/Presentation

- appetite change
- capillary refill delayed
- chest discomfort
- chills
- fatigue
- diaphoresis
- eating pattern and tolerance change
- irritability
- lethargic
- listless
- lymphadenopathy
- malaise
- mental status change
- night sweats
- pallor
- respiratory pattern change
- restlessness
- shivering
- skin cool and moist
- skin flushed
- skin mottled
- skin warm
- sleepiness
- urinary output decreased

Vital Signs

- heart rate increased
- respiratory rate increased
- blood pressure increased or decreased
- SpO₂ (peripheral oxygen saturation) decreased
- body temperature change from baseline
- body temperature elevated

Laboratory Values

- ABG (arterial blood gas) abnormal
- bands increased
- blood glucose level abnormal
- CRP (C-reactive protein) elevated
- culture positive (urine, blood, sputum)
- ESR (erythrocyte sedimentation rate) elevated
- gram stain positive
- serum lactate elevated
- WBC (white blood cell) count change

Diagnostic Results

- CXR (chest x-ray) abnormal

Problem Intervention(s)

Prevent Infection Progression

- Implement transmission-based precautions and isolation, as indicated, to prevent spread of infection.
- Obtain cultures prior to initiating antimicrobial therapy, when possible. Do not delay treatment for laboratory results in the presence of high suspicion or clinical indicators.
- Administer ordered antimicrobial therapy promptly; reassess need regularly.

- Monitor laboratory value, diagnostic test and clinical status trends for signs of infection progression.
- Identify early signs of sepsis, such as increased heart rate and decreased blood pressure, as well as changes in mental state, respiratory pattern or peripheral perfusion.
- Prepare for rapid sepsis management, including lactate level, intravenous access, fluid administration and oxygen therapy.
- Provide fever-reduction and comfort measures.

Associated Documentation

- Fever Reduction/Comfort Measures
 - Infection Management
 - Isolation Precautions
-

Respiratory Compromise (Pneumonia)

Signs/Symptoms/Presentation

- breath sounds abnormal
- breathing pattern altered
- breathlessness
- confusion
- cough impaired
- cough increased
- cyanosis
- feeding difficulty
- irritability
- restlessness
- shortness of breath
- sputum consistency change
- swallow function impaired
- work of breathing increased

Vital Signs

- heart rate increased
- respiratory rate increased
- SpO2 (peripheral oxygen saturation) decreased

Laboratory Values

- ABG (arterial blood gas) abnormal

Diagnostic Results

- CXR (chest x-ray) abnormal

Problem Intervention(s)

Promote Airway Secretion Clearance

- Assess the effectiveness of pulmonary hygiene and ability to perform airway clearance techniques.
- Encourage early mobility or ambulation; match activity to ability and tolerance.
- Encourage deep breathing and lung expansion therapy to prevent atelectasis (e.g., incentive spirometry, positive airway pressure); adjust to patient's response.
- Anticipate the need to splint chest or abdominal wall with cough to minimize discomfort; assist if needed.
- Initiate cough-enhancement and airway-clearance techniques with instruction (e.g., active cycle breathing, positive expiratory pressure, suction); consider mechanical insufflation-exsufflation in the presence of neuromuscular weakness.
- Consider inhaled pharmacologic therapy (e.g., beta-2 agonist, mucolytic, corticosteroid, antimicrobial) to improve mucus clearance, inflammation, cough response and air flow.

Optimize Oxygenation and Ventilation

- Establish oxygenation and ventilation parameters and goals; consider home baseline values for chronic cardiac and lung conditions.
- Anticipate noninvasive and invasive monitoring (e.g., pulse oximetry, end-tidal carbon dioxide, blood gases, cardiovascular).

- Maintain optimal position to relieve discomfort, breathlessness and ventilation/perfusion mismatch.
- Provide oxygen therapy judiciously to avoid hyperoxemia; adjust to achieve oxygenation goal.
- Monitor fluid balance closely to minimize the risk of fluid overload.
- Implement noninvasive or invasive positive pressure to enhance alveolar ventilation.

Associated Documentation

- Breathing Techniques/Airway Clearance
- Cough And Deep Breathing

Associated Documentation

- Airway/Ventilation Management
- Head of Bed (HOB) Position

General Education

- admission, transition of care
- orientation to care setting, routine
- advance care planning
- diagnostic tests/procedures
- opioid medication management
- oral health
- medication management
- pain assessment process
- safe medication disposal
- tobacco use, smoke exposure
- treatment plan

Safety Education

- call light use
 - equipment/home supplies
 - fall prevention
 - harm prevention
 - infection prevention
 - MDRO (multidrug-resistant organism) care
 - personal health information
 - resources for support
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Education: Overview

- description
 - signs/symptoms
-

Education: Self Management

- activity
 - fluid/food intake
 - immunizations
 - infection prevention
 - medication management
 - pulmonary hygiene
 - tobacco use, smoke exposure
 - VTE prevention
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Education: When to Seek Medical Attention

- unresolved/worsening symptoms
 - VTE symptoms
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Population-Specific Considerations

Age-Related

- Blood cultures may not be reliable in the diagnosis of pneumonia in children.

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